

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/740,954

REMARKS

Claims 1-23 are all the claims pending in the application. By this Amendment, Applicant amends claims 1 and 13 to further clarify the invention. In addition, Applicant rewrites claims 3, 4, 6, 9, 15-18, and 21 into their independent forms.

Applicant thanks the Examiner for withdrawing the previous rejections. The Examiner, however, found new grounds for rejecting the claims. The Examiner rejected claims 1, 2, 7, 8, 12-14, 19, 20, 22, and 23 under 35 U.S.C. § 103(a).

In particular, claims 1 and 13 are rejected as being obvious over U.S. Patent No. 6,483,932 to Martinez et al. (hereinafter “Martinez”) in view of U.S. Patent No. 6,493,041 to Hanko et al. (hereinafter “Hanko”) and claims 2, 7, 8, 12, 14, 19, 20, 22, and 23 as being obvious over Martinez and Hanko in view of U.S. Patent No. 6,650, 366 to Wilkins (hereinafter “Wilkins”). Applicant respectfully traverses these rejections and respectfully requests that the Examiner reconsider these rejections in view of the following comments.

As claims 1 and 13 are independent, the other rejected claims being dependent, this response focuses initially on claims 1 and 13. Independent claims 1 and 13, among a number of unique features, require some variation of determining a timing for selecting at least one suitable picked-up image of said plurality of picked up images, where the selection is based on a result from said obtained information and where the selected at least one suitable picked-up image is output to at least one of a display and a fingerprint recognition module. Applicant respectfully submits that the unique combination recited above of claims 1 and 13 is absent from the combined teachings of Martinez and Hanko.

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An exemplary embodiment of the present invention is consistent with an image pick-up apparatus for picking up a plurality of images being chronologically arranged along time-series, in attempts to determine which image has the highest quality. After the images are picked up, information about changes in gray level value between the picked up images is determined. Based on that information, a timing for extracting a more suitable (a better quality) image is determined. An aspect of the present invention is to select an image of the highest quality by analyzing the chronological change information, a judging criteria (changes in gray level values between the picked up images). In short, the image pick-up apparatus attempts to select an image of better quality from a number of picked up images and either output this image on a display, for example, or output this image to a fingerprint recognition module. This passage is provided by way of an explanatory example only and is not intended to limit the scope of the claims in any way.

As acknowledged by the Examiner, Martinez does not teach or suggest determining a timing for selecting at least one suitable image from a number of images based on the obtained information (see page 2 of the Office Action). Indeed, Martinez only teaches capturing a plurality of fingerprint image frames (Fig. 3A) based on the rolling of a finger and knitting these images together (col. 15, lines 10 to 30). Martinez clearly fails to teach or suggest determining a timing for extracting a suitable image based on the obtained information and outputting this suitable image to a display or fingerprint detection module. Instead, Martinez only teaches knitting images together. In short, there is no selection and output of a suitable image from the plurality of images based on the obtained information.

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Hanko, on the other hand, has nothing to do with fingerprint images. Instead, Hanko relates to detecting motion in video in which frames from an incoming video stream are digitized. That is, the pixels of each incoming digitized frame are compared to the respective pixels of a reference frame, and differences between the incoming pixels and the reference pixels are determined. In Hanko, if the pixel difference for a pixel exceeds an applicable pixel difference threshold, the pixel is considered to be “different,” and if the number of “different” pixels for a frame exceeds an applicable frame difference threshold, motion is considered to have occurred. Thereby, a motion detection signal is emitted. Moreover, in one of the embodiments, Hanko teaches selecting a new reference frame when the first frame that exhibits no motion occurs after one or more frames that exhibit motion (see Abstract; Fig. 1; col. 5, lines 1 to 19; col. 8, line 31 to col. 9, line 4).

The Examiner alleges that Hanko cures the deficient teachings of Martinez by disclosing the selection of a new reference frame (see pages 2-3 of the Office Action). In Hanko, however, the new reference frame is selected when no motion occurs after one or more motion frames. In Hanko, the selection of a new reference frame has nothing to do with a suitable picked-up image from a number of picked up images. That is, Hanko is directed to detecting motion; hence it uses a frame with no motion as a reference. In other words, Hanko is not related to selecting a frame with higher quality, *i.e.*, a suitable frame.

Moreover, the combined teachings of Martinez and Hanko do not teach or suggest outputting the selected picked-up image to a display or a fingerprint recognition module. In Martinez, no image is selected. Instead, in Martinez, the images are knitted together. In Hanko,

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the selected new frame is simply used as a reference frame and not for output. In short, the combined teachings of Martinez and Hanko fail to teach or suggest the unique combination of features identified above with respect to claims 1 and 13.

Therefore, determining a timing for selecting at least one suitable picked-up image of said plurality of picked up images, wherein said selection is based on a result from said obtained information and wherein the at least one selected suitable picked-up image is output to at least one of a display or fingerprint detection module as set forth in the independent claims 1 and 13, are not suggested by the combined teachings of Martinez and Hanko. For at least these exemplary reasons, Applicant respectfully submits that claims 1 and 13 are patentable over the combined teachings of Martinez and Hanko. Thus, it is appropriate and necessary for the Examiner to withdraw this rejection of claims 1 and 13.

Next, claims 2, 7, 8, 12, 14, 19, 20, 22, and 23 are rejected as being obvious over Martinez and Hanko in view of Wilkins. Claims 2, 7, 8, and 12 depends on claim 1 and claims 14, 19, 20, 22, and 23 depends on claim 13. Applicant has already demonstrated that the combined teachings of Martinez and Hanko fail to teach or suggest the unique features of claims 1 and 13. Wilkins is being cited only for its teaching of counting number of grey level increases and number of grey level decreases for producing a statistical profile (see pages 3-4 of the Office Action) and as such clearly fails to cure the deficient teachings of Martinez and Hanko. Therefore, claims 1 and 13 are clearly patentable over the combined teachings of Martinez, Hanko, and Wilkins. Claims 2, 7, 8, 12, 14, 19, 20, 22, and 23 are patentable at least by virtue of their dependency on claim 1 or 13.

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Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 3-6, 9-11, 15-18, and 21 would be allowable if rewritten in the independent form. Applicant rewrites claims 3, 4, 6, 9, 15-18, and 21 into their independent form including all the features of the intervening claims. In view thereof, Applicant respectfully requests the Examiner to allow claims 3, 4, 6, 9, 15-18, and 21.

With respect to the remaining claims that contain allowable subject matter, *i.e.*, claims 5, 10, and 11, Applicant respectfully holds the rewriting of these claims in abeyance until arguments presented with respect to independent claim 1 have been reconsidered.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: May 9, 2005

Attorney Docket No.: Q62391